

Serial No. 10/808,422
Docket No. PTGF-03093

2

AMENDMENTS TO THE CLAIMS:

Please cancel claims 9-16 without prejudice or disclaimer.

1. (Currently amended) A semiconductor light emitting element comprising:
a crystal growth substrate;
an epitaxial lateral overgrowth (ELO) mask formed on said substrate; and
a semiconductor crystal formed on said substrate and said ELO mask,
~~that is made by using the lateral growth function of semiconductor crystal while~~
~~providing an ELO mask on a crystal growth surface of a crystal growth substrate,~~
wherein at least part of a sidewall of the ELO mask comprises ~~is provided with~~ an inclined plane that is inclined to the crystal growth surface such that the semiconductor crystal to be formed on the ELO mask substantially has no void.
2. (Currently amended) The semiconductor light emitting element according to claim 1, wherein~~[[:]]~~ at least part of the inclined plane is curved.
3. (Currently amended) The semiconductor light emitting element according to claim 2, wherein~~[[:]]~~ the ~~shape of~~ ELO mask comprises a in cross section in a direction perpendicular ~~vertical~~ to the crystal growth surface which is one of approximately semi-circular, ~~approximately elliptical, partly semi-circular, and partly elliptical is formed nearly~~ ~~semicircular, nearly semi-elliptic or partially either of these shapes.~~
4. (Currently amended) The semiconductor light emitting element according to claim 1, wherein~~[[:]]~~ the ~~shape of~~ ELO mask comprises a in cross section in a direction perpendicular ~~vertical~~ to the crystal growth surface which is one of approximately ~~formed nearly~~ isosceles triangular and approximately ~~or nearly~~ isosceles trapezoidal with a flat top.
5. (Currently amended) The semiconductor light emitting element according to claim 1, wherein~~[[:]]~~ the ~~shape of~~ ELO mask comprises one of a spot shape and an approximately ~~stripe shape on the crystal growth surface is formed like a spot or a nearly stripe.~~
6. (Currently amended) The semiconductor light emitting element according to claim 1, wherein~~[[:]]~~ the crystal growth substrate comprises ~~is of~~ sapphire.

Serial No. 10/808,422
Docket No. PTGF-03093

3

7. (Currently amended) The semiconductor light emitting element according to claim 1, wherein the semiconductor crystal comprises ~~is of~~ $\text{Al}_x\text{Ga}_{1-x}\text{N}$ ($0 \leq x \leq 1$).

8. (Currently amended) The semiconductor light emitting element according to claim 1, wherein the semiconductor light emitting element comprises ~~is~~ a flip-chip type light-emitting diode (LED) ~~LED~~, and

wherein the refractive index of the ELO mask is ~~set to be~~ greater than the refractive index ~~that~~ of the crystal growth substrate and smaller than the refractive index ~~that~~ of the semiconductor crystal.

9-16. (Canceled)

17. (New) The semiconductor light emitting element according to claim 1, wherein said ELO mask comprises at least one of a dome-shaped mask, and a convex lens-shaped mask which converges light.

18. (New) The semiconductor light emitting element according to claim 1, wherein said ELO mask comprises a transparent mask.

19. (New) The semiconductor light emitting element according to claim 1, wherein said ELO mask comprises one of SiO_2 , ZrO_2 , W, HfO_2 , and Y_2O_3 .

20. (New) The semiconductor light emitting element according to claim 1, wherein said ELO mask comprises an amorphous material.

21. (New) The semiconductor light emitting element according to claim 1, wherein said crystal growth substrate comprises a sapphire substrate.

22. (New) The semiconductor light emitting element according to claim 1, wherein said crystal growth substrate comprises one of silicon, silicon carbide, GaN, AlInGaN, AlN and InGaN.

Serial No. 10/808,422
Docket No. PTGF-03093

4

23. (New) The semiconductor light emitting element according to claim 1, wherein said semiconductor crystal comprises a GaN layer which is formed directly on said substrate.
24. (New) The semiconductor light emitting element according to claim 1, wherein substantially no voids are formed between said mask layer and said semiconductor crystal.
25. (New) The semiconductor light emitting element according to claim 1, wherein inclined plane forms a three-dimensional angle with a crystal growth surface of said substrate.
26. (New) The semiconductor light emitting element according to claim 5, wherein said spot shape comprises a polygon shape including one of a triangle shape, hexagon shape, circle shape and square shape.
27. (New) A semiconductor light emitting element, comprising:
a crystal growth substrate;
an epitaxial lateral overgrowth (ELO) mask formed on said substrate and having a sidewall with an inclined plane; and
a semiconductor crystal layer formed on said substrate and said ELO mask,
wherein said inclined plane inhibits formation of a void between said semiconductor crystal layer and said mask layer during formation of said semiconductor crystal layer.
28. (New) A semiconductor light emitting element, comprising:
a sapphire crystal growth substrate;
an epitaxial lateral overgrowth (ELO) mask formed on said substrate, said mask comprising an amorphous material and having a sidewall with a curved inclined plane; and
a semiconductor crystal layer which comprises $\text{Al}_x\text{Ga}_{1-x}\text{N}$ ($0 \leq x \leq 1$) and is formed on said substrate and said ELO mask,
wherein said curved inclined plane inhibits formation of a void between said semiconductor crystal layer and said mask layer during formation of said semiconductor crystal layer.